

REMARKS

Claims 1-24 are pending in this application. Non-elected claims 11-19 have been withdrawn by the Examiner. By this Amendment, the Abstract and claims 1, 7, and 11 are amended, and claims 20-24 are added. Support for the amendments to the claims may be found, for example, in the specification at paragraphs [0086] and [0088] and Figs. 6 and 7. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Restriction Requirement

Applicants affirm their provisional election of Group I, claims 1-10, with traverse. It is respectfully submitted that the subject matter of all claims 1-19 is sufficiently related that a thorough search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims. Thus, it is respectfully submitted that the search and examination of the entire application could be made without serious burden. See MPEP §803 in which it is stated that "if the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions" (emphasis added). It is respectfully submitted that this policy should apply in the present application in order to avoid unnecessary delay and expense to Applicants and duplicative examination by the Patent Office.

Thus, withdrawal of the Restriction Election of Species Requirement is respectfully requested.

II. Objection To The Abstract

The Office Action objects to the Abstract for informalities. As indicated above, attached herewith is an amended Abstract. Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

III. Claim Objection

The Office Action objects to claim 7 for an informality. Claim 7 is amended according to the Examiner's helpful suggestion. Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

IV. 35 U.S.C. §103(a) Rejections

A. Sekino In View Of Janjic

The Office Action rejects claims 1-4, 6-8, and 10 under 35 U.S.C. §103(a) over U.S. Patent No. 6,740,267 to Sekino et al. ("Sekino") in view of U.S. Patent No. 3,934,348 to Janjic ("Janjic"). Applicants respectfully traverse the rejection.

Without conceding the propriety of the rejection, claim 1 is amended as set forth above. The combination of Sekino and Janjic would not have rendered obvious the method of claim 1. The combination of Sekino of Janjic at least fails to teach or suggest (1) forming a back coating layer, (2) forming a casting mold provided with a void, and (3) forming at least two coating layers on the surface of a substrate.

The Office Action acknowledges that Sekino fails to teach a step of forming a back coating layer on at least a part of a surface of the substrate, by using a first porcelain that is constituted principally by ceramic. See Office Action, page 6, lines 1-4. In addition to this acknowledged deficiency, Sekino does not teach or suggest forming the cast mold from the various porcelains A-D by casting. Sekino relates to a technique for manufacturing a ceramic artificial crown by baking various porcelains A-D on a ceramic core E. See Sekino, Fig. 2 and Fig. 3. In Sekino, the various porcelains A-D are formed on the ceramic core E by

application, for example, by coating or painting the various porcelains A-D sequentially on the ceramic core with brushes. See Sekino, col. 3, lines 16-19.

Therefore, in addition to Sekino failing to teach or suggest a step of forming a back coating layer, Sekino also at least fails to disclose "the step of forming the casting mold provided with the void" or "the step of forming at least the two coating layers on the surface of the substrate."

Janjic fails to cure the above-described deficiencies of Sekino. Janjic is directed to a process for making a porcelain crown having two layers of porcelain, specifically an opaque layer 18 and a regular porcelain layer 19. See Janjic, Figs. 6 and 7, and col. 1, lines 20-62. However, the opaque layer 18 is formed on a protrusion of a male mold 14, not on a substrate and, therefore, the opaque layer does not correspond to the claimed back coating layer of claim 1. See Janjic, Fig. 6. The regular layer 19 is formed by hardening the porcelain supplied into a recess of a female mold 13, not by casting or by introduction through a porcelain introducing path. See Janjic, Fig. 2. Therefore, Janjic fails to teach or suggest the step of forming the back coating layer as recited in claim 1.

In contrast, the method of claim 1 discloses "a step of forming a back coating layer on at least a part of a surface of the substrate," and "a step of forming a cast coating layer on at least part of a surface of the back coating layer, by pouring a second porcelain into the void of the casting mold at a casting temperature to form at least two coating layers on the surface of the substrate."

Moreover, as described in the specification, when the cast coating layer is formed at a high temperature, a problem of fluidity of the back coating layer formed in advance may arise upon formation of the cast coating layer. In other words, when the casting temperatures of the two porcelains are the same, during the casting of the second porcelain, the previously cast back coating layer may move, resulting in an undesirable uneven thickness. See

specification at paragraph [0009]. Sekino fails to recognize or identify the problem and, thus, also fails to identify a solution to this problem.

In Sekino, the various porcelains A-D are applied sequentially at an atmosphere temperature on the surface of the core E by, for example, brushes. The atmosphere temperature is far lower than the cast temperature and, accordingly, the method of Sekino would not result in the above-described problem. Sekino, accordingly, does not disclose forming the various porcelains A-D by casting and does not disclose the viscosity of the various porcelains A-D at the casting temperature.

In contrast to Sekino, the method of claim 1 provides a solution to this problem by providing the feature of, "wherein the second porcelain is constituted principally by ceramic whose composition is different from that of the ceramic of the first porcelain such that viscosity of the second porcelain at the casting temperature is lower than that of the first porcelain."

The Office Action asserts that col. 2, lines 22-25 of Sekino teaches the relative viscosity of the ceramics. However, this section of Sekino merely explains the viscosity of the ceramic core art using the conventional general ceramic material. Furthermore, col. 4, lines 15-20 of Sekino merely explains the viscosity of the ceramic core using MgO–CaO–SiO₂ glass material possessing 10² to 10⁹ poises.

Sekino does not teach or suggest the features of claim 1 because it does not even recognize the problem solved by the method of claim 1 and, therefore, there would have been no reason why one skilled in the art would have selected the two porcelains of claim 1 or the order of their casting from the disclosure of Sekino.

Because independent claim 7 has at least the above-described features of claim 1, claim 7 would not have been rendered obvious by the combination of Sekino and Janjic for at least the reasons described above.

Claims 1 and 7 would not have been rendered obvious by Sekino and Janjic. Claims 2-4, 6, 8, and 10 variously depend from claims 1 and 7 and, thus, also would not have been rendered obvious by Sekino and Janjic. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Sekino In View Of Janjic and Brodkin

The Office Action rejects claims 5 and 9 under 35 U.S.C. §103(a) over Sekino in view of Janjic and further in view of U.S. Patent No. 6,428,614 to Brodkin et al. ("Brodkin"). Applicants respectfully traverse the rejection.

The deficiencies of the combination of Sekino and Janjic with respect to claims 1 and 7 are discussed above. Brodkin, which is only relied upon by the Office Action for its alleged disclosure of the additional limitations recited in claims 5 and 9, at least fails to cure the deficiencies of the combination of Sekino and Janjic with respect to claims 1 and 7. As such, the combination of Sekino, Janjic, and Brodkin fails to teach or suggest each and every limitation of claim 1 and 7. Accordingly, the subject matter of claims 1 and 7 cannot be fairly considered to have been rendered obvious by the combined teachings of Sekino, Janjic, and Brodkin.

Claims 5 and 9 depend from claims 1 and 7 respectively and, thus, respectively require all the limitations of claims 1 and 7. Thus, for at least the reasons discussed above, claims 5 and 9 would not have been rendered obvious by the combined teachings of Sekino, Janjic, and Brodkin.

V. New Claims

By this Amendment, new claims 20-24 are presented. New claims 20-24 variously depend from claim 1 and, thus, distinguish over the applied references for at least the reasons discussed above with respect to claim 1. Support for the new claims may be found, for example, in the specification at paragraphs [0045], [0056], [0058], [0087], and [0047]. No

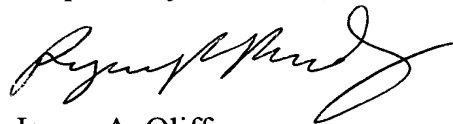
new matter is added. Prompt examination and allowance of new claims 20-24 are respectfully requested.

VI. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:RRB/mms

Attachment:
Amended Abstract

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